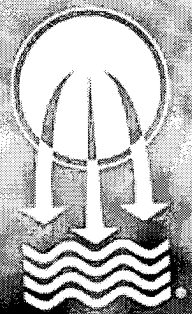
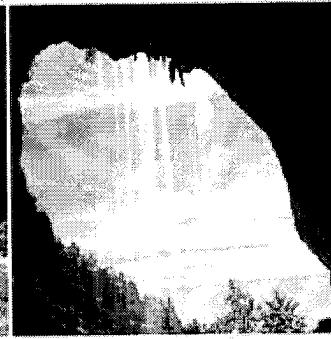
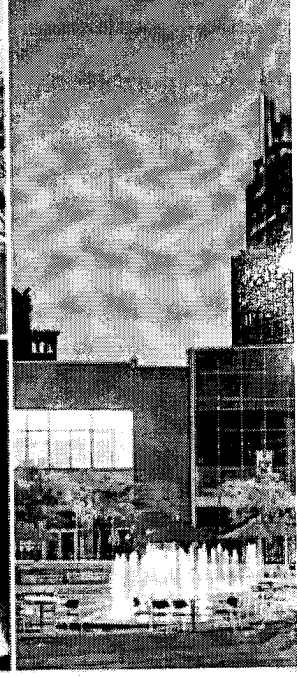
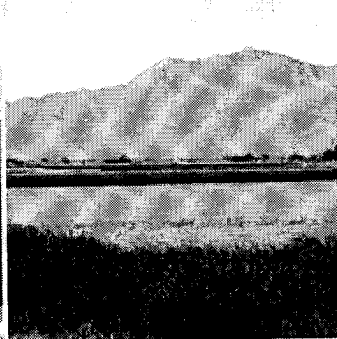


# ANNUAL REPORT

Municipal Separate Storm Sewer System



Prepared for the  
**City of Phoenix, Arizona**



Prepared by

**URS**

September 30, 2012



### PART 3: NARRATIVE SUMMARY OF STORMWATER MANAGEMENT PROGRAM ACTIVITIES

Attach a status summary addressing each of the following in the approximate order referenced below. Briefly describe implementation, progress, and challenges in each area during the reporting year. Also, explain any significant developments or changes to the number or type of activities, frequency or schedule of activities, or the priorities or procedures for specific management practices.

#### A. Summarize public awareness activities including outreach

- **Report outreach events, topics, number of people reached, number and type of materials distributed and the Target groups.**

##### Stormwater Outreach

The City of Phoenix conducts a variety of stormwater-related public awareness activities. For example, this fiscal year the City developed a stormwater video that was shown on PHX11 starting in September 2011, running once or twice a day for several months, and intermittently since. The City has also participated in several public outreach events, including two Earth Day celebrations. Staff distributed handouts and encouraged participants to learn about stormwater pollution through a trivia game. Also in Fiscal Year 2011/2012, staff presented information on proposed revisions to Phoenix City Code Chapters 32, 32A, 32B, and 32C to several industry groups, including developers, contractors and the Chamber of Commerce.

In June, the Water Services Department (WSD) launched a new Stormwater Program webpage. Staff worked on the site for over a year, and the result is a significant improvement over the old webpage in both content and organization. The highlight is an interactive webpage that includes information on stormwater pollution prevention for residents, businesses, and construction activities. Visit us at [www.phoenix.gov/stormwater!](http://www.phoenix.gov/stormwater!)

The City of Phoenix also participates in Stormwater Outreach for Regional Municipalities (STORM) to provide coordinated stormwater outreach throughout the Phoenix metropolitan area. This year STORM conducted a radio campaign on the proper management of yard chemicals, such as pesticides and herbicides. STORM also conducted a seminar on stormwater construction requirements with the Arizona Chapter of the Associated General Contractors of America. The seminar featured presentations by member municipalities, as well as county and state agency representatives regarding the regulatory requirements.

A summary of the stormwater outreach activities for FY11/12 is included in Table 3-1.

**Table 3-1  
Stormwater Outreach Activities**

Date(s)	Event / Activity	Audience	Message	Handouts*
09/05/2011 – 10/23/2011	Radio Ads (STORM) English & Spanish	General Public 3,000,000 people (estimate)	Proper management of yard chemicals (e.g., pesticides and herbicides)	Not Applicable
09/13/2011	Interview with Clear Channel radio	General Public Targeted Business (Landscapers & Pest Control)	Proper management of yard chemicals (e.g., pesticides and herbicides)	Not Applicable

Date(s)	Event / Activity	Audience	Message	Handouts*
09/29/2011 to present	Stormwater Video on PHX11 (also available on the WSD webpage)	General Public  No information available on number of viewers.	General information on the City's Stormwater Management Program, including program activities and fundamentals of stormwater pollution prevention	Not Applicable
11/15/2011	National Recycle Day City Hall	General Public  150 people (estimate)	General Stormwater Pollution Awareness	<ul style="list-style-type: none"> <li>• 100 Bags on Board</li> <li>• 10 Dust Pans</li> <li>• 75 Storm Drain Dan Dolls</li> <li>• 100 Erasers</li> <li>• 50 Storm Drain Dan Coloring Books</li> </ul>
11/18/2011 – 01/05/2012	Movie Theater Campaign (STORM)	General Public  1,000,000 people (estimate)	General Stormwater Pollution Awareness	Not Applicable
01/11/2012	Presentation to the Home Builders Association of Central Arizona	Developers  14 people	Proposed revisions to City Code Chapters 32, 32A, 32B, and 32C	Not Applicable
01/17/2012	Presentation to AZ Chapter, Associated General Contractors	Contractors  5 people	Proposed revisions to City Code Chapters 32, 32A, 32B, and 32C	Not Applicable
01/19/2012	Presentation to American Council of Engineering Companies of AZ	Consulting Engineers  60 people (estimate)	Proposed revisions to City Code Chapters 32, 32A, 32B, and 32C	Not Applicable
02/08/2012	Presentation to AZ Chamber of Commerce and Industry, Environmental Issues Breakfast	Businesses  40 people (estimate)	Proposed revisions to City Code Chapters 32, 32A, 32B, and 32C	Not Applicable
04/18/2012	Earth Day Event Phoenix Community College	Students  100 people (estimate)	General Stormwater Pollution Awareness	Not Applicable
04/20/2012	Earth Day 2012 Cesar Chavez Park	General Public  500 people (estimate)	General stormwater pollution awareness	<ul style="list-style-type: none"> <li>• 150 Storm Drain Dan Dolls</li> <li>• 655 Storm Drain Dan Coloring Books</li> <li>• 170 Pet Waste Bags</li> <li>• 130 Dust Pans</li> <li>• Miscellaneous pencils, erasers, book-marks, etc.</li> </ul>

Date(s)	Event / Activity	Audience	Message	Handouts*
04/24/2012	Construction Seminar (STORM)	Contractors 50 people	AZPDES construction requirements	Not Applicable
04/27/2012	"El Dia De Los Ninos" Margaret T. Hance Park	School Children 500 Children (estimate)	General stormwater pollution awareness	<ul style="list-style-type: none"> <li>• Storm Drain Dan Coloring Books</li> <li>• Bookmarks</li> <li>• Erasers</li> <li>• Puzzles</li> </ul>
05/07/2012 – 06/24/2012	Radio Ads (STORM) English & Spanish	General Public 2,700,000 people (estimate)	Importance of vehicle maintenance to prevent pollution	Not Applicable
06/11/2012	Bulk Mailing of Brochures	Automotive Service Shops 950 Service Centers	Stormwater Pollution Prevention and Proper Management of Automotive Chemicals	950 Automotive Brochures
06/25/2012	School Presentation	School Children (34)	General Stormwater Pollution Awareness	<ul style="list-style-type: none"> <li>• 28 Storm Drain Dan Coloring Books</li> <li>• Pencils</li> <li>• Erasers</li> <li>• Puzzles, and book marks</li> </ul>
Various	Twitter Postings	Water Services Twitter Followers (490)	General Stormwater Pollution Awareness	Not Applicable
Various	Facebook Posting	Water Services Facebook Followers (34)	General Stormwater Pollution Awareness	Not Applicable

\*Note: A goal of the City's Sustainability Program is to reduce the volume of paper that is printed and distributed.

## B. Summarize public involvement activities including outreach

- **Identify activities, number of people involved, number and type of materials distributed if applicable.**

### Household Hazardous Waste Collection

The Public Works Department (PWD) provided the public with 9 Household Hazardous Waste (HHW) collection programs in Fiscal Year 2011/2012. Over 6,000 City of Phoenix residents participated in the HHW events. Close to 35,600 gallons of oil based paint and related materials were collected, along with 18,400 gallons of flammable liquids and over 3,100 gallons of used oil. Other items collected included the following: latex paint, antifreeze, pesticides, herbicides, and other hazardous and toxic materials. Non-hazardous materials brought to HHW events were sorted out and disposed of as Municipal Solid Waste (MSW), such as shampoo, lotions, and quart-sized latex paint.

➤ **Describe MS4 system for public reporting of spills, dumping, discharges, and related stormwater issues.**

The City of Phoenix continues to offer a Stormwater Hotline for anyone who wishes to call in a complaint concerning illicit discharges or releases to the storm drain system. The City received over 220 complaints during the year from several sources including the telephone hotline and email.

**C. Summarize Illicit Discharge, Detection and Elimination (IDDE) program activities. Include:**

➤ **Illicit discharge prevention activities.**

The City of Phoenix discourages discharges to the storm drain system through the placement of Pollution Awareness Markers (PAMs) on existing catch basins. This year, more than 1,500 PAMs were added to existing catch basins using a two part epoxy, and more than 14,000 PAMs have been installed since the program started.

The City standard for managing hazardous waste and hazardous materials at municipal facilities is the Hazardous Materials Management Plan (HMMP) Manual (AR 2.314). The manual is available to City employees online through the City's intranet. HMMP procedures apply to all City of Phoenix departments unless stated otherwise and were developed to ensure the City operations are in full compliance with federal, state, and local environmental and safety regulations. The HMMP Manual directs personnel to locate storage areas as far away as possible from washes, drains, and drywells and requires that they be protected from weather. Guidance is provided on secondary containment, security, permitting requirements, required safety and spill response equipment, proper signs, and labeling requirements. Container storage requirements such as aisle spacing, limitations on drum stacking, segregation of incompatible materials, and types and condition of containers are presented.

The HMMP contains a comprehensive stormwater policy, which, for most facilities, serves as the facility stormwater management plan required by City Code. The policy applies to all city facilities with the potential to impact stormwater and addresses permit applicability [including the Multi-Sector General Permit (MSGP) and De Minimis General Permit (DMGP)], training and inspection requirements, and best management practices for solid waste/litter control, parking lots and building washing, scrap metal and equipment, bulk material piles, and maintenance of stormwater management devices.

The HMMP is maintained by the Office of Environmental Programs (OEP) Pollution Prevention (P2) staff. Each HMMP procedure is reviewed at least once every two years and revised as necessary. Revisions may be made more frequently if regulatory requirements change. Individual HMMP procedures are reviewed on a staggered schedule, rather than all at once. The city personnel with stormwater expertise included in the review process include the Environmental Programs Manager and/or OEP Environmental Quality Specialists, Water Services Stormwater Program Coordinator, and Environmental Coordinators from the major operating departments. Revisions are typically drafted by the OEP P2 staff, evaluated by the Law and Human Resources Departments, and reviewed by city operating departments, with opportunity for comment, prior to implementation.

During FY 2011/12, seven of twelve HMMP procedures were reviewed and, where necessary, revised or replaced/consolidated. As part of the review process, the universal waste lamp policy and mercury-containing-equipment policy were combined into one new policy. Also, the "Container Management" policy was renamed "Storage and Use of Hazardous Materials".

➤ **Training dates and topics:**

Stormwater training on IDDE is accomplished through training offered by various departments, including Water Services, Public Works, Parks and Recreation, and OEP. Municipal employee stormwater training is coordinated by the OEP P2 Program.

The Phoenix MS4 permit requires IDDE training for two major groups of employees: (1) field staff without direct stormwater program responsibilities; and (2) employees with direct stormwater program responsibilities (Stormwater Field Staff). In addition, the training is divided into three (3) frequencies:

- Annual (for select field staff with "no direct stormwater responsibility" only)
- New Employee Training (for Stormwater Field Staff – offered twice a year)
- Refresher Training (for Stormwater Field Staff – offered every two years)

Other specific training requirements include municipal, industrial, and construction site inspections, hazardous materials handling, spill management, street maintenance and repair and water/sewer maintenance and is limited to employees working in functions with the potential to impact stormwater. Affected employees are identified in the stormwater training plan in the city's Stormwater Management Plan (SWMP). The training is offered by various departments and is divided into two frequencies:

- New Employee Training (conducted twice per year)
- Refresher Training (conducted once every two years)

**Annual**

Stormwater Awareness Training. Awareness Training on IDDE is provided to select field staff with no direct stormwater responsibilities. Topics taken from the City MS4 stormwater permit requirements include identification of harmful/prohibited practices (illegal dumping or spills) into the City's stormwater system and proper management procedures (reporting to the Stormwater Management Program). Thirty-four training sessions were held on the following dates with 713 employees attending:

2011

August 25, 30  
September 8, 21, 27  
October 5, 19, 27  
November 2, 9  
December 15, 21

2012

January 11, 18, 31  
February 2, 6 (5 sessions), 9, 16, 22  
March 7, 26, 28, 29  
April 4, 5 (2 sessions), 12, 24  
June 15



## **New Employee Training and Biennial Refreshers**

IDDE for Stormwater Inspection Staff. Topics covered include MS4 permit requirements, Phoenix City Code, detecting and identifying illicit discharges, De Minimis and other sources of non-stormwater discharges, outfall inspections, sampling, and field screening. Training sessions were conducted during 2012 on May 31<sup>st</sup>, June 6<sup>th</sup>, and June 20<sup>th</sup> for a total of 41 employees.

Street Repair and Road Improvement for Street Maintenance Staff. Training is provided to all field staff in the Street Maintenance Division of the Street Transportation Department (STR). Training covers IDDE awareness, pollution prevention, and best management practices to minimize discharges to storm drains. Specific topics include BMPs for hazardous material use and storage, street sweeping, painting and striping, sediment pile management, paving, vehicle maintenance and washing, handling spills, solid waste, and concrete washout areas. A total of 38 employees were trained during two sessions held on November 14, 2011.

Spill Prevention and Management Practices. Training covers site specific spill prevention and response procedures/responsibilities and trains spill management practices to prevent or minimize discharges to the storm sewer system and drywells. Eight hundred thirty-seven employees were trained during 35 training sessions held on the following dates:

### 2011

September 21  
October 12  
November 15, 16 (2), 17 (3), 21, 26

### 2012

January 11, 23, 24, 25, 26, 27  
February 1, (2), 2, 8, 9, 14  
March 14, 19, 20, 26  
April 13, 16, 17, 19, 26 (2)  
May 2, 16, 21

Hazardous Material Handling. Training covers responsibilities for spill prevention and reporting, compliance with regulatory and City hazardous materials management procedures (proper handling, storage, transportation, and disposal) to prevent contamination of stormwater runoff. Twenty-six training sessions were held on the following dates:

### 2011

November 15, 16 (2), 17 (3), 21, 26

### 2012

January 23, 24, 25, 27  
February 2, 8, 14, 16  
March 19, 20, 26  
April 13, 16, 17, 26 (2)  
May 2, 21

Six-hundred ninety-seven (697) employees completed this training.

Water/Sewer Maintenance. Training is provided to field staff in Water Distribution and Wastewater Collection and includes protocols to minimize discharges including those found in the Water Services Department (WSD) Stormwater Pollution Prevention Plan, Emergency Response Plan and Field Incident Response Plan. One-hundred ninety-one employees completed this training during 23 training sessions held on the following dates:



2011

August 25, 30  
September 8, 21, 27  
October 5, 19, 27  
November 2, 9  
December 5, 15, 21

2012

January 11, 18, 31  
February 2, 16, 22  
March 7  
April 4, 12, 24

Municipal Stormwater Inspections. Training topics include federal and local regulatory requirements, applicable permits and codes, stormwater best management practices, municipal facility inspection procedures, illicit discharges and De Minimis discharges. The two municipal facility inspectors attended this training on May 30, 2012.

Industrial Stormwater Inspections. Training is provided to all inspectors in the WSD Environmental Services Stormwater section. Topics include applicable permits and codes, stormwater pollution prevention policies, structural and non-structural best management practices, and inspection and enforcement procedures. Training sessions were held on May 31<sup>st</sup>, June 6<sup>th</sup>, and June 20<sup>th</sup> for 39 employees.

Construction Sites Plan Review and Inspection Training. Training is provided to Planning and Development Department (PDD), OEP, and other construction site inspection staff. Topics include grading and drainage design and review practices, and City Code as it relates to stormwater management (32A and 32C). Training also includes an overview of the Arizona Pollutant Discharge Elimination System (AZPDES) Construction General Permit requirements, construction site best management practices for sediment and erosion control, inspection procedures and enforcement procedures. Sessions were held on November 14, 2011 and June 13, 2012 for 36 employees.

➤ **IDDE screening program and investigations – including an overview of industrial facility inspections, identified sources, and any significant corrective or enforcement actions.**

The IDDE program continues to track illicit flows discovered in the storm drain system to identify their sources. Dry-weather flows are investigated by opening manholes and following the flow upstream. Flow changes (typically volume) are observed by the IDDE crew when the manholes are opened. Once the suspected illicit tap is determined to be nearby, the video system is then inserted in the storm drain pipe to track the flow directly to its source. By using the video system the City can then determine where the illicit connection or tap is located and then conduct the appropriate inspection. Occasionally, dye testing or a similar procedure is used to verify the source of the connection.

This Fiscal Year, the Stormwater Management Section worked with a consultant to investigate the sources of dry-weather flows in the downtown area. With the consultant's assistance, the following connections were identified:

- **Luhr's Building:** A significant non-stormwater discharge was identified coming from the Luhr's Tower located at 11 West Jefferson Street. The building was pumping groundwater from a well in the basement for use in its cooling towers. The excess water was discharged to the storm drain via a direct connection. The property owner was asked to sample the discharge to determine if it was a significant source of pollutants. Because the sample contained elevated levels of lead and copper, the property owner was required to disconnect from the storm drain. The owner

disconnected from the storm drain in April 2012, eliminating a non-stormwater flow of up to 1,200 gallons per minute.

- Heritage Square: A non-stormwater connection was identified (via video monitoring) in a storm drain in the vicinity of 5<sup>th</sup> Street and Monroe. After several weeks of investigation, the source was verified to be from a leaking landscape irrigation system near the Heritage Square parking structure. The Parks and Recreation Department replaced several irrigation valves and timers in the area, eliminating the non-stormwater flow.
- Phoenix Convention Center: Non-stormwater flows were observed in the vicinity of the Phoenix Convention Center (PCC). Through investigation and collaboration with PCC staff, the sources of the flows were determined to be a leaking landscape irrigation system and faulty valves. Repairs were made to the equipment, and the non-stormwater flows were eliminated.
- Regency Garage: A connection was identified in the back of a catch basin at the southwest corner of 1<sup>st</sup> Street and Adams. The connection was investigated and determined to be from the building's cooling tower. Since chemicals are used in this process, the property owner (PCC) was required to re-direct the discharge to the sanitary sewer. PCC is in the process of working with a contractor, and the storm drain connection should be re-routed to the sanitary sewer by the end of October 2012.
- Leaking Water Meter: A leaking water meter was identified at 5<sup>th</sup> Avenue and Jackson and water was flowing into an adjacent catch basin. The water meter was repaired.
- 101 North 1<sup>st</sup> Avenue: A minor non-stormwater flow was identified (<1 gpm). The source of the flow was identified as air conditioner condensate, an allowable non-stormwater discharge.
- Wells Fargo Building: A minor discharge identified at 2<sup>nd</sup> Avenue and Washington Street is suspected to be coming from the Wells Fargo Building. Inspectors worked with STR to remove a blockage in the storm drain. Though the blockage was removed, inspectors were unable to video inspect the line due to excessive standing water. This investigation is ongoing.
- Monroe Street between 1<sup>st</sup> Avenue and Central: Suspected washdown water was observed entering the storm drain. Stormwater Management staff visited business owners in the vicinity, including Seamus McCaffery's and the Hotel San Carlos, to discuss how to properly clean patios and sidewalks.
- Wyndham Hotel: A minor non-stormwater discharge was identified from the alleyway associated with the Wyndham Hotel (now Renaissance Hotel). Stormwater Management staff visited with the Manager and Associate Engineer to identify the source and discuss best management practices. The source appears to be from roof drains that drain the roof and pool patio only.
- City Scape: A minor non-stormwater flow was identified (<1 gpm). Since portions of this site are still under construction, WSD inspectors are working with PDD to identify the source of this dry-weather flow.
- Sheraton Hotel: As part of an investigation of potential connections to the Arizona Department of Transportation (ADOT) Central Avenue Tunnel, a non-stormwater flow was identified in the area of 2<sup>nd</sup> Street and Fillmore. The flow was determined to

be from two connections at the Sheraton Hotel. One discharge is irrigation water from over watering a rooftop herb garden. Hotel staff have been made aware of the problem and been provided information on water conservation and stormwater pollution prevention. The second discharge was from a trash compactor which was incorrectly connected to the storm drain system through an oil interceptor. The compactor was immediately disconnected from the storm drain, eliminating the illicit discharge.

In addition to the projects in the downtown area, the Stormwater Management Section IDDE team identified the following connections:

- Flows from outfalls OC005, PD003, SR027, SR035, and SR061 were found to be coming from Salt River Project (SRP) junction boxes. Irrigation water is an allowable non-stormwater discharge under City Code.
- Flow from outfall AC005 was found to be coming from landscape irrigation water around Metro Center Mall. Irrigation water is an allowable non-stormwater discharge under City Code. No other sources were identified.
- Flow from outfall AC007 was found to be coming from multiple sources, including a water leak at the Premier Inn located near Metro Center Mall (eliminated). Additional flow was identified from sidewalk wash water from Castles and Coasters amusement park (no detergents used). Irrigation water overflow was also observed in the area. These sources are allowable non-stormwater discharges.

During the reporting period, the Stormwater Management Section responded to over 220 complaints of illicit discharge. Most complaints involved the discharge of pool water into the street. Each complaint investigation includes the dissemination of information related to stormwater pollution prevention.

In addition to pool water complaints, the Stormwater Management Section responded to several illicit discharge complaints at industrial and commercial facilities. Adobe Garden Home Owners Association (HOA) had a sewage discharge to the MS4 as a result of a plugged lift station. In a joint enforcement action with the Commercial Section, the HOA was issued a Notice of Violation (NOV) and required to clean the street and adjacent wash. A Charles Schwab office building had a malfunctioning sump pump in which oily water was discharged to the street and storm drain. Charles Schwab was issued an NOV and required to clean the street. Tapestry on Central condominium complex was discharging excessive irrigation water to the street, leaving standing water and creating vector control issues. The Tapestry on Central HOA was required to repair the irrigation system to reduce the discharge of landscape irrigation water.

#### **D. Municipal Facilities**

##### **➤ Status of identification and inventory of these facilities.**

The Municipal Facility Inventory is maintained in a database that tracks all inspection activities, compliance findings and pollution prevention recommendations. The inventory includes all facilities owned and operated by City staff that store or use hazardous chemicals in containers greater than 5 gallons, or which otherwise have the potential to pollute stormwater. Chemicals stored onsite at each facility are tracked through an online citywide Environmental Data Management System (EDMS). There were 326 municipal facilities on

the inventory as of July 1, 2012. During FY 11/12, there were revisions to the MFI based upon facility openings, closures/consolidations, and operational changes resulting in fewer chemicals onsite (<5 gallon containers) or operations assumed by privatized contractors.

Information maintained in the inventory includes: address, latitude and longitude, chemicals stored or used and their material safety data sheets, operational status (operational or closed), Standard Industrial Classification (SIC) codes, date of last assessment, brief description of operations, facility contact, as well as other compliance-related information. Compilation of the latitude and longitude data was completed in December, 2010. The number of facilities may change based on new facilities becoming operational or existing facilities undergoing a change/cessation of operations. Such changes to the Municipal Facility Inventory are tracked through the EDMS and the facility assessment database.

#### High-Risk Facilities Identification and Prioritization

The high-risk facility identification and prioritization was completed on June 30, 2011. The high risk identification process considered each of the following: 1) quantity of chemicals stored onsite (based on Tier II Reports), 2) potential for exposure of such chemicals to stormwater based on storage location, 3) likelihood of a spill or release to occur and discharge offsite based on structural BMPs and site drainage characteristics, 4) potential severity of impact on surface waters for a worst-case scenario release, and 5) MSGP coverage. Storage of and potential for release of other pollutants at the site were also considered as an additional risk factor.

Numeric ranking criteria are used to evaluate all city facilities that had submitted Tier II Reports. The criteria indicate which facilities are “higher risk” and also the overall risk of facilities relative to one another. Whenever these sites are physically assessed, the risk factors are reviewed and adjusted, if necessary. Adjustments made during FY 11/12 reduced the high risk facility inventory from 54 to 45 facilities. Facilities that have MSGP-2010 coverage were ranked lower in risk with respect to the MS4 permit, since these facilities have their own comprehensive stormwater pollution prevention plans and inspection programs.

#### ➤ **Overview of inspection findings (i.e., number inspected, number with follow-up actions needed, significant findings).**

The OEP P2 Section conducts Environmental Facility Assessments (EFAs) of City owned and operated facilities to acquire a baseline of information, ensure compliance with select environmental and safety requirements (which includes ensuring effective spill response and hazardous material handling procedures are in place), and identify opportunities to reduce hazardous material use and hazardous waste generation. The OEP Environmental Facility Assessment inspection checklist includes a section on stormwater BMPs, the facility’s Stormwater Management Plan, and specific questions related to high-risk facilities; this checklist is used to meet the Facility Assessment Measurable Goal at Appendix A Section III.B.(1) and the Municipal Facility Inspection Measurable Goal at Appendix A Section IV.C.(2).

EFAs were completed at 98 of the facilities on the Municipal Facility Inventory this fiscal year. Thirty-three facilities had a total of 68 findings; recommended corrective action items are summarized in the next section.

Each municipal facility flagged as high-risk receives an additional stormwater site inspection between the June 30, 2011 high-risk identification date and the end of the permit term. As of July 1, 2012, twenty-three high-risk facilities had received a second stormwater inspection as referenced above. Based upon these assessments, some facilities were reclassified and no longer considered high-risk. Four facilities had recommendations for improved stormwater controls which were not considered significant findings. The remaining high-risk sites are scheduled for stormwater inspection in FY 12/13.

One municipal facility had a significant action item as a result of an illicit discharge detection investigation (See Capital Improvements Projects section below.)

➤ **Activities needed and performed in response to inspections (Environmental Facility Assessments).**

The OEP P2 Section records and tracks all activities needed as a result of an EFA until resolution, or closure. Upon an inspection, the facility contact and/or Department Director is provided a memo with the inspection results. Findings (corrective actions needed) are identified in an Action Plan that is attached to the memo. In addition, facility status updates identifying any uncorrected findings are provided to Department Directors every 6 months. The text below summarizes the corrective action activities performed during the 2011/2012 assessment cycle.

2011/2012 Corrective Actions Implemented (EFAs)

- Spill response BMPs:
  - Maintained/replenished spill response equipment
  - Departments were required to review/develop departmental spill programs
- Structural BMPs (to minimize exposure to stormwater and prevent spills):
  - Provided weather protection for significant materials or moved storage areas indoors
  - Provided or repaired/maintained secondary containment for hazardous material containers and used oil, etc.
  - Provided proper grading and berms for areas where significant materials are stored
- Non-structural BMPs (practices and procedures)
  - Ensured container closure and labeling standards are followed for chemical containers and universal wastes
  - Improved housekeeping and general site, parking lot, and outdoor equipment storage practices

2011/2012 High-Risk Facilities – Improved Stormwater Controls Implemented

- Provided weather protection for equipment / relocated equipment storage areas
- Improved housekeeping and general site, parking lot, and significant materials storage practices
- Stabilized disturbed site soil areas to reduce erosion

- Repaired irrigation system leaks to reduce erosion and non-stormwater discharges

#### 2011/2012 Other Stormwater-Related Improvement Projects

The following capital improvement projects related to stormwater quality were funded and initiated in FY 2011/12. These were related to IDDE investigations or other ongoing site improvements rather than routine facility assessment findings.

- Disconnect and retrofit non-stormwater discharge to the MS4 at a parking garage.
- Repair erosion issues and improve grading and drainage on areas of city properties located on closed landfills to ensure solid waste does not become exposed.

#### ➤ **Identification and tracking of municipal owned and operated facilities subject to permitting under the MSGP.**

Below is a listing of the eleven (11) City owned and operated facilities subject to permitting under the MSGP, based on their industry sector and/or SIC code. A No Exposure Certification was submitted for the City Clerk Customer Services facility in July 2010.

**Table 3-2  
City Owned/Operated Facilities Subject to MSGP**

Department	Facility	Address	POC	Authorization #	Comments
<b>Public Works</b>	Skunk Creek Landfill	3165 W Happy Valley Rd Phoenix, AZ 85027	Civil Eng II Joy Bell 602-256-5605	AZMSG-61708	
	27 <sup>th</sup> Avenue Solid Waste Management Facility	3060 S 27 <sup>th</sup> Ave Phoenix, AZ 85009		AZMSG-62581	
	SR 85	28361 W Patterson Rd Buckeye, AZ 85326		AZMSG-14391	
	North Gateway Transfer Station	30205 N. Black Canyon Hwy, Phoenix, AZ 85085		AZMSG-61710	
<b>Aviation</b>	Sky Harbor International Airport	3400 E Sky Harbor Blvd, Ste 3300 Phoenix, AZ 85034	Environmental Qual Spec Lisa Farinas 602-273-2787	AZMSG-66063	
	Deer Valley Airport	702 W Deer Valley Rd Phoenix, AZ 85027		AZMSG-66017	
	Phoenix/Goodyear Airport	1658 S Litchfield Rd Goodyear, AZ 85338		AZMSG-61934	
<b>Water Services</b>	91 <sup>st</sup> Avenue Wastewater Treatment Plant	5616 S 91 <sup>st</sup> Ave Tolleson, AZ 85353	Environmental Qual Spec Doug Taylor 602-534-5081	AZMSG-61871	
	23 <sup>rd</sup> Avenue Wastewater Treatment Plant	2470 S 22 <sup>nd</sup> Ave Phoenix, AZ 85009		AZMSG-61896	
	Cave Creek Water Reclamation Plant	22841 N Cave Creek Rd Phoenix, AZ 85024		AZMSG-61713	
<b>City Clerk</b>	Customer Service Center (Print Shop)	2640 S 22 <sup>nd</sup> Ave Phoenix, AZ	Environmental Qual Specialist Steve Carsberg 602-534-1778	Not Applicable	No Exposure Certification July 2010

Note: The City previously submitted Sector L Closure Certifications for 15 city properties located on closed landfill sites, which are not covered under the AZPDES Multi-Sector General Permit.

- **Status of all inventories, maps, and map studies required by the permit to be developed including completion dates.**
  - The stormwater geographic information system (GIS) database and input application has been accepted and implemented. The data conversion project, which is extracting public stormwater features from Recorded Documents and entering the data into the GIS, is currently underway and is on schedule to be completed by January 2013. In addition to performing Quality Assurance/Quality Control on the conversion data, stormwater GIS staff is also entering private stormwater systems into the GIS database.
  - The stormwater GIS feature feasibility study was initiated in FY 11/12, and completed in August 2012. The final report is included as an attachment. This report fulfills the requirement from Appendix A, Section IV.E of the MS4 permit.
  - The City of Phoenix considers the storm drains to be protected critical infrastructure. As such, the City has not provided a copy of the GIS maps as an attachment. However, the maps are available for review by ADEQ upon request.
- **For the Outfall inspection program, describe the status of:**
  - Staff training  
Outfall inspection training is described in Section H.
  - Outfall inventory  
The outfall inventory is described in Section H.
  - Inspection tracking system  
The outfall inspection tracking system is described in Section H.
  - Overview of Inspection and screening procedures, and any significant findings  
Inspection and screening procedures and findings are discussed in Section H.

#### **E. Industrial Facilities**

- **Status of identification and inventory of these facilities.**

The City purchases an inventory of industrial facilities from Infogroup, a database marketing firm. The data indicate that the City of Phoenix currently has over 3,000 industrial facilities. The City also included information on select commercial facilities such as restaurants, garages, and gasoline stations in the inventory. With the addition of these commercial businesses, the current database contains more than 8,000 facilities.

The City used GIS to plot industrial facilities within the city limits. This information was used to prioritize industrial inspections within a ¼ mile radius of the impaired section of the Salt River. The information can also be used to coordinate industrial inspections in other key geographic areas. For example, during FY2012 inspectors focused on industrial facilities located in a geographic area generally bounded by Central Avenue to the west, 48<sup>th</sup> Street to the east, the Salt River to the north, and Baseline Road to the south. Inspectors also focused on TRI, RCRA, TSDF, and non-municipal solid waste facilities throughout the City.



Because lead and copper have been identified in wet-weather samples in quantities exceeding surface water quality standards, facilities that use or store lead or copper have been identified for priority inspections.

In addition to the industrial inspections, the City has incorporated a stormwater assessment into many of the inspections conducted by the Commercial Inspection Section. Stormwater assessments are conducted at commercial businesses including restaurants, car washes, and service stations. When significant stormwater issues are noted, the Inspector forwards the information to the Stormwater Management Section for follow-up.

➤ **An overview of inspection findings and note significant findings.**

In FY11/12, the City conducted 638 industrial and commercial inspections and issued 232 enforcement letters.

The most common violation identified continues to be a failure to develop a Stormwater Management Plan (SWMP) or Stormwater Pollution Prevention Plan (SWPPP), as required by City code. For those facilities that have the potential to release pollutants to the MS4, the City ordinance requires that each facility develop and implement a SWMP, containing facility-specific BMPs.

Significant findings included common stormwater issues identified at a number of recycling facilities (SIC Code 5093), including failing to have a SWMP and failing to protect materials from contact with stormwater. Staff conducted 22 inspections at various metal, auto, and paper recyclers, and brought many into compliance by requiring SWMPs, and other control measures. In one situation, escalated enforcement was necessary to bring the facility into compliance. Consequently, the owner implemented a SWPPP and submitted an NOI to ADEQ. The facility proactively developed SWPPPs for several other recycling facilities he owns in Phoenix. A recent re-inspection showed that BMPs were being carried out.

An additional 66 stormwater inspections were conducted by the Commercial Section. Where stormwater issues were significant, the commercial inspector referred the facility to the Stormwater Section for follow-up. Most stormwater issues noted during commercial inspections involved housekeeping related issues that were easily addressed (e.g., spills around tallow bins and open dumpsters).

➤ **Corrective and enforcement actions needed and taken in response to inspections.**

The 232 formal enforcement actions included Compliance Inspection Notices (170), Notices of Concern (NOC) (40), Notices of Violation (NOV) (19), and Show Cause meeting notices (3) (formerly called 'Compliance Status Review' meeting notices). SWMP revision notices were not included in the number of enforcement actions for this fiscal year. Most enforcement actions were resolved quickly, with over 95 percent of all industrial inspections closed within one year of the initial inspection.

As stated above, the Stormwater Management Section conducted three 'Show Cause' meetings this Fiscal Year. A 'Show Cause' meeting is typically the last step in the enforcement process, when previous efforts to bring the facility into compliance are unsuccessful. The facility is asked to enter into a settlement agreement and penalties may be assessed. The following facilities attended Show Cause meetings:

- JDM Countertops: The facility failed to develop and implement a SWMP and had visible discharges to the MS4. The facility was required to stop all discharges to the MS4, develop and implement a SWMP, and pay a fine of \$3,000.
- American Recycling: The facility failed to develop and implement an adequate SWMP and had documented discharges to the MS4. The facility was required to stop all discharges to the MS4, develop and implement a SWMP, and pay a fine of \$4,500.
- Van Hees: The facility failed to develop and implement an adequate SWMP. The facility was required to develop and implement a SWMP. A fine of \$1,250 was assessed but not collected because the company went out of business.

#### **F. Construction Program Activities**

The City of Phoenix Storm Drain Design Manual requires retention areas for buildings to account for drainage collected from the roof tops, parking lots, and other drainage areas. When the PDD reviews grading plans, staff ensure that the site retention volume is adequate to prevent runoff for the required storm event. If inspectors find that the plans are not being followed, they may stop work on the project. If the problem continues, court-ordered injunctions may be served or civil penalties assessed.

Chapter 32A, the City's Grading and Drainage Ordinance, establishes minimum requirements for regulating grading and drainage and establishes implementation and enforcement procedures. Grading and Drainage Permits are issued to applicants who fulfill the application requirements, including the submittal of a Stormwater Management Plan when applicable. Activities regulated by the Grading and Drainage Ordinance are subject to inspection and enforcement action. Enforcement steps begin with a verbal warning, and may lead to a written warning, halting project inspections on the building, and/or a civil citation. The PDD Civil and Site Inspection team includes 12 members tasked with enforcing the ordinance.

Staff from PDD hold pre-construction meetings with private developers to discuss many issues, including on-site retention of stormwater, controlling erosion, and the installation of other BMPs. Communications with developers occur during periodic observations by inspection staff and during formal inspections.

An overview of the PDD process for stormwater related submittals is provided below:

- The customer submits grading/drainage and stormwater plans for review
- PDD provides red lines on plans
- The customer address the red lines
- Plans are approved for construction by PDD
- The customer applies for required permits
- Permits are created by PDD, including Civil Grading & Drainage and Civil Stormwater
- PDD office staff obtain a copy of the AZPDES Construction General Permit authorization number before the customer can purchase permits
- The customer schedules a Pre-Construction Meeting prior to beginning work

- BMPs are implemented by the customer prior to the start of construction
- Inspector verifies that track out and BMPs are properly maintained during each inspection
- The customer submits an NOT (Notice of Termination) when the project is completed
- Warranty inspection is performed by PDD, one-year after completion.

➤ **Status of inventory/plan review of these facilities.**

The PDD database contains a comprehensive inventory of developments for which permits have been issued, plans have been reviewed, and inspections have been conducted. The permits are categorized in the database according to the type of work requested to be performed. For example, the database lists 115 Stormwater Management Civil Permits and 194 Grading/Drainage Civil Permits for Fiscal Year 2011/2012. In the reporting year, 90 Construction/Grading Plans were reviewed.

➤ **An overview of Inspection findings and significant findings.**

Inspection findings are documented in the PDD database. During Fiscal Year 2011/2012, a total of 320 construction sites were inspected for stormwater. There were 44 documented deficiencies where corrective action was requested. Eleven projects had multiple occurrences that required follow-up. Twenty-four private developer projects required corrective action. The nature of the violations, in order of frequency, was:

- Not maintaining BMPs
- Track out not working
- BMPs not installed or starting without notification
- BMPs not per plan or missing
- Silt fence not maintained.

Some municipal construction projects are not subject to PDD's stormwater permitting process and are not inspected by PDD staff. In FY11/12, there were 22 such municipal construction projects inspected by either OEP or WSD staff for adequate stormwater best management practices and compliance with the local stormwater ordinance. There were eight documented deficiencies, including chemical storage issues, (housekeeping/secondary containment), administrative violations, and missing or insufficient sediment controls such as around perimeter of material stockpiles not actively being worked.

➤ **Corrective and enforcement actions needed and taken in response to inspections.**

Most documented deficiencies, as discussed above, were corrected by the next day. No escalated enforcement was required to bring the project into compliance (i.e., suspension of work), and most violations were corrected upon first request.

PDD requires that the developer provide a "letter of explanation" when they cannot obtain a Notice of Termination (NOT) at the end of the project. These are forwarded to ADEQ twice a year. PDD provided project names and locations, along with contact information for the owner/developer contractor for one project in Fiscal Year 2011/2012.

Staff Training: The PDD Municipal Stormwater Inspection Training for Construction Inspectors trains plan review and inspection staff on administrative procedures (NOI and SWPPP), compliance, and appropriate BMPs to reduce pollution from construction activities.

Details on training dates and number of attendees are included in Section C.

## **G. Post Construction Controls**

### **➤ Summary of any new post-construction controls for municipal projects.**

The City requires that stormwater retention areas be sized to contain the volume of water required by the latest (April 2011) edition of the *Storm Water Policies and Standards Manual*. Currently, the standard requires retention of the 100-year, 2-hour duration storm, except in those areas exempted by law or excluded in a technical appeals process.

The Phoenix City Council adopted "Green Building" Guidelines to design and build all new bond-funded municipal buildings to the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) Certified standard in 2005.

In FY11/12, the City completed the renovation of the Public Transit Central Station, a LEED for Existing Buildings Operations & Maintenance project which incorporates elements of Low Impact Development. Porous concrete and other pervious hardscape elements were incorporated to increase onsite retention and minimize stormwater runoff.

Recent improvements to the landmark Tovrea Castle site included construction of a small visitor's center with associated parking facilities. The site chosen for the visitor center improvements was previously developed, but was in a dilapidated condition. Site selection was a critical part of the Low Impact Development (LID) process. By making improvements to a previously developed site, the potential increase in runoff was significantly mitigated. Pervious concrete pavement was also selected for use in the vehicle parking areas and on-site sidewalks. The pervious concrete increases infiltration across the project site and significantly reduces site runoff. This was extremely valuable as the hard rock conditions of the site made on-site retention difficult to achieve. The first flush continued to be retained on-site by use of shallow landscaped bio-swale areas and a small shallow depression (less than one foot of depth). Through appropriate site selection and use of other LID techniques, the total site runoff to the city's rights-of-way was decreased from the existing conditions.

The City of Phoenix Human Services Department installed a permeable pavement parking lot at the Helen Drake Senior Center in FY11/12. The City received a grant from ADEQ to study the effects of permeable pavement on stormwater quality. The study consists of 5 sample sites (roof top, regular concrete, and 3 permeable pavement areas) and has been ongoing since January 2012. The data collected will be compiled into a report for ADEQ.

In FY11/12, the City completed the First Street Project, from Fillmore to McKinley Streets. Permeable pavers were incorporated into the sidewalk in the pedestrian enhancements along 1<sup>st</sup> Street.

➤ **An overview of the City's post-construction inspection program.**

PDD inspectors conduct a one-year warranty inspection on each construction project within their jurisdiction. This inspection provides an opportunity to identify corrective action to be implemented by the developer or responsible sub-contractor for a variety of items, including stormwater and grading and drainage controls.

For municipal projects not subject to PDD's stormwater permit program, OEP or WSD staff conducts post-construction stormwater inspections within one year of the project completion.

During FY 11/12, post-construction stormwater inspections were conducted by PDD at 96 private construction projects and by OEP or WSD at 28 municipal construction projects.

➤ **Corrective and enforcement actions needed and taken in response to post-construction inspections.**

The PDD database contains directives for items identified for follow-up during the warranty inspection. No corrective or enforcement actions were initiated as a result of a post-construction warranty inspection.

➤ **Summary of any new or revised post-construction requirements related to permits the City issues.**

No new or revised post-construction requirements were identified by PDD personnel.

**H. Outfall inspection program; describe the status of**

➤ **Staff training.**

Stormwater staff members are trained on sampling procedures and techniques when they are assigned to the Outfall Inspection rotation, typically within the first year of employment. As part of this, they are required to familiarize themselves with the applicable federal regulations at 40 CFR 122 and 40 CFR 136 and the Standard Operating Procedures (SOPs) concerning sampling and QA/QC. Refresher training is provided informally throughout the year and formally at least once every two years.

Details on training dates and number of attendees are included in Section C.

➤ **Outfall inventory.**

The City maintains a database to document stormwater outfalls. The inventory includes approximately 765 total outfalls this fiscal year with 486 of these designated as "Major" outfalls according to EPA guidelines. Thirty-eight outfalls are designated as "priority," either due to observed flow within the past five years, or because they discharge to the impaired segment of the Salt River. The outfall inventory is included as an attachment to this report.

➤ **Inspection tracking system.**

Each outfall inspection is conducted by a trained team of inspectors who use a form specifically designed to capture the data as they are observed. Once the inspection is completed and the inspectors return to the office, all data are entered into a database created exclusively for the stormwater program. Entered data include the documentation

and tracking of all (both major and minor) outfall inspections. All items required in 40 CFR 122 are found on the form including both visual and field screening activities.

➤ **Inspection and screening procedures and significant findings.**

The inspection crew visits each "priority" outfall annually and the remaining major outfalls at least once during the five-year permit cycle. The inspection begins with an overall visual observation of the outfall structure and surrounding area. Visual items are noted such as residue, staining, dead animals, and differences in plant life near the outfall. If a flow (greater than 0.03 gpm) is observed, a sample is collected for the field screening activity. Field screening includes pH, temperature, total chlorine, sulfide, ammonia, phenol, detergent, lead, and copper. All observations are recorded on a standard inspection checklist.

In FY 11/12, staff inspected major outfalls along the Arizona Canal/Diversion Channel (ACDC), Skunk Creek Wash, the Tenth Street Wash, and the Salt River. All priority outfalls were inspected, regardless of location.

Staff also inspected drainage features along the Laveen Conveyance Channel (LCC), which primarily receives agricultural drainage. Because the Corps of Engineers determined that the LCC is not a Water of the US, the only outfall inspected in this drainage area was where the LCC discharges to the Salt River.

Fourteen outfalls had two days of consecutive dry-weather flow, which triggered the field screening process at those locations. An IDDE investigation was initiated at one location based upon the results of those field screening activities. Outfall SC035 exceeded for conductivity on the second day of field screening. The flow was tracked to an SRP junction box, though the cause of the elevated conductivity could not be identified.

**I. Description of any new or revised ordinances, rules or policies related to stormwater management or control, if applicable.**

Staff from WSD, STR, and PDD worked with the Law Department to revise City Code Chapter 32 (Subdivisions), 32A (Grading and Drainage), 32B (Floodplains), and 32C (Stormwater Quality Protection). The proposed revisions were approved by Council on May 30, and went into effect on July 1, 2012. Copies of the revised City Code are included as an attachment.

In FY11/12, the WSD Stormwater Management Section decided to replace the Stormwater Policy and Procedures Manual with a series of SOPs as part of an effort to implement a quality management system. The SOPs are controlled documents and are scheduled for annual review.

The Field Sampling Chapter (Chapter 2) has been replaced by:

- SOP 6023: Outfall Inventory / Prioritization
- SOP 6024: Outfall Monitoring
- SOP 6001: Stormwater Sampling
- SOP 6007: Field Screening
- SOP 6022: Stormwater Sampling Equipment

The IDDE Chapter (Chapter 7) has been replaced by:

- SOP 6002:IDDE Prioritization
- SOP 6006:IDDE Investigation

The Facility Inspection Chapter (Chapter 4) has been replaced by:

- SOP 6003:Facility Inventory / Priority List
- SOP 6027:Stormwater Inspections

A complete list of Stormwater Management Section SOPs is included as an attachment to this report.

The Stormwater Management Section replaced the Quality Assurance Project Plan (QAPP) for stormwater field activities with a Quality Assurance Plan (QAP), Document 12153. The QAP is a more comprehensive document, and includes sampling and field activities, as well as quality control objectives, and corrective action guidelines.

The QAP and SOPs are available for review, if requested.

**J. Fiscal Expenditures; provide a brief report on expenditures related to implementation of the City's stormwater program for the previous fiscal year.**

The City collects a stormwater fee to defray the costs of operating the stormwater management program.

Stormwater program charges from STR, WSD, and OEP are paid out of the stormwater Fund. The fee does not cover the costs for most maintenance of the drainage system or infrastructure improvements, nor does it cover ancillary stormwater activities, such as street sweeping or the HHW program. Stormwater program costs for PDD are funded by construction permit fees.

Water Services Department

WSD coordinates the City's Stormwater Program. In addition to overall program administration, WSD conducts stormwater outreach, complaint investigations, outfall inspections and IDDE investigations, industrial inspections, wet-weather monitoring, and reporting.

WSD allocated over \$100,000 to hire a consultant to assist with IDDE investigations this Fiscal Year. The department also hired a consultant to provide stormwater training to the Water Quality Inspectors. Equipment purchases included a field spectrophotometer and CHEMetrics test kits for field screening and a pole camera for IDDE investigations. The budget for the Section was over \$1,600,000 in FY11/12.

Street Transportation Department

STR conducts storm drain maintenance and inspections, wash maintenance, and is responsible for the stormwater GIS. The stormwater budget for STR was over \$2,300,000 in FY11/12. The budget included over \$1.0 million for wash maintenance and approximately \$1.0 million for the stormwater GIS.



Office of Environmental Programs

OEP conducts municipal facility assessments and oversees the stormwater training plan. OEP also advises city departments on regulatory compliance issues. In FY 2010/11, OEP assumed the responsibility of conducting stormwater inspections for those municipal construction and post-construction projects which did not go through the PDD permit process. The stormwater operating budget for OEP was approximately \$100,000 in FY11/12, plus an additional \$95,000 appropriated for capital improvement projects.

Planning and Development Services Department

PDD conducts grading and drainage plan reviews and inspections. PDD costs are covered by construction permit fees, and their budget may vary significantly depending on the number of permitted construction projects.

**Table 3-3  
Stormwater Management Program Fiscal Expenditures**

City of Phoenix Department	Fiscal Year 2011/2012 Actual	Fiscal Year 2012/2013 Projected
<b>Water Services Department</b>		
Stormwater Program Support	\$1,656,423	\$1,767,911
<b>Street Transportation Department</b>		
Wash Maintenance	\$1,139,603	\$1,587,567
Geographic Information System	\$973,389	\$607,446
<b>Planning and Development Department</b>		
Grading and Drainage – Plan Review	\$225,990	\$215,000
Grading & Drainage – Inspections	\$174,938	\$195,000
<b>Office of Environmental Programs</b>		
Stormwater Program Support	\$102,400	\$146,558
Capital Improvement Projects	\$95,500	\$320,000

